

## **ABSTRACT OF DISCLOSURE**

For the automatic determination of the diameter of a tool, particularly a saw blade for an automatic wall saw, which is driven by a motor via a gear unit, the moment of inertia of the tool is used as an indicator for its diameter. Three basic solution variants are introduced. In particular, the system including a motor, gear unit and tool is treated as a dual-mass oscillator such that the elasticity of the shafts and gears is arranged as a torsion spring between the inertial masses in two discrete points while taking into account two coefficients of friction including coefficients of the known inertia of the motor rotor ( $\Theta_R$ ) and of the tool ( $\Theta_S$ ). This system can be described by equations which are then simplified by reasonable assumptions or premises. The selected formulations are solved for the moment of inertia of the tool to determine the diameter therefrom and to make an optimal adjustment for the drive possible which is adapted to the respective tool.